

**OPTIMIZED REFERENCE VOLTAGE GENERATION USING SWITCHED  
CAPACITOR SCALING FOR DATA CONVERTERS**

**ABSTRACT OF THE DISCLOSURE**

5        An algorithmic or cyclic data converter uses an RSD stage having a switched capacitor network for efficiently scaling at least one externally supplied reference voltage. A reference voltage is scaled by using capacitor ratios that also function to provide an output voltage used as a residue output of the RSD A/D converter. The residue is used to generate a bit value corresponding to the magnitude of the residue. Two RSD stages cycle back and forth generating a logic value each half clock cycle until the desired bit resolution is achieved. In one form, the RSD stage scales the externally supplied reference voltage only by factors of less than one. In another form, the RSD stage scales the reference voltage by any scaling factor. A reference voltage scaling circuit separate from the RSD stage is avoided.

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